



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/730,033	12/09/2003	Toshihiko Ouchi	03500.017455.	3038

5514 7590 09/09/2004

FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER

KANG, JULIANA K

ART UNIT	PAPER NUMBER
----------	--------------

2874

DATE MAILED: 09/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/730,033

Applicant(s)

OUCHI, TOSHIHIKO

Examiner

Juliana K. Kang

Art Unit

2874

pw

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5 and 9-16 is/are rejected.
- 7) ☒ Claim(s) 3,4 and 6-8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/9/04</u> . | 6) <input type="checkbox"/> Other: _____ |

1. Applicant's communication filed on July 12, 2004 has been carefully studied by the Examiner. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Thus, this action is made final.

2. Applicant has amended the drawings, specification and claims to overcome the objections and 112 rejections made during the previous Office action.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 2, 5, and 9 are rejected under 35 U.S.C. 102(a) as being anticipated by Heflinger (U.S. Patent 6,321,001 B1).

Regarding claim 1, Heflinger discloses an optical waveguide device comprising an optical waveguide layer (15) and a light-receiving element (46, 50), the optical waveguide being provided with a first light direction-altering means (28, 32) which alters the direction of a light propagated in the optical waveguide layer and directs the light to the light-receiving element, the light receiving element being provided with a plurality of

Art Unit: 2874

light receiving portions (46a-e, 50a-e), being capable of receiving signals independently. Heflinger et al's light-direction-altering means are diffractive Bragg gratings which are a type of a reflector.

Regarding claim 2, Heflinger discloses the optical waveguide layer that is further provided with a light-emitting element (18) and a second light-direction-altering means (16) for receiving light emitted from the light-emitting element at an angle to an in-plane direction of the optical waveguide layer, wherein the second light direction-altering means and the light-emitting element are in such a relative position that light emitted from the light-emitting element is directed into the optical waveguide layer (see column 3 lines 10-16).

Regarding claim 5, Heflinger discloses the light-receiving element (46, 50) that includes a plurality of light-receiving portions (46a-e, 50a-e) linearly arranged (having only one dimension), and the first light direction-altering means allows the light-receiving element to receive light propagated from a predetermined region in the optical waveguide layer, and the light-receiving element discriminates the transmitting source of the received light based on a light intensity distribution (wavelength) that varies depending on the position of the transmitting source of light (see column 4 lines 41-62).

Regarding claim 9, as best understood by the Examiner with the rejections stated above, Heflinger discloses the device configured to propagate a plurality of different wavelengths in the optical waveguide layer to receive the signals by the light-receiving element (46, 50).

5. Claims 1, 2, 10, and 12-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Perner (US 2002/0196502 A1).

Regarding claim 1, Perner discloses an optical waveguide device comprising: an optical waveguide layer (12); and a light-receiving element (18), wherein the optical waveguide layer is provided with a first light direction-altering means (16a) including a reflector (prism), which alters the direction of a light propagated in the optical waveguide layer and direct the light to the light-receiving element, wherein the light-receiving element is provided with a plurality of light-receiving portions (112) (see paragraphs [0050] and [0051] and Fig. 2), and wherein each of the light-receiving portions is capable of receiving a signal independently. Since the light-receiving portions are made of six separate photodiodes they are inherently capable of receiving a signal independently (see [0051]).

Regarding claim 2, Perner discloses a light-emitting element (18), and a second light direction-altering means (16b) to couple the light in and out of the waveguide layer (see Fig. 4).

Regarding claim 10, Perner discloses an optical waveguide device comprising: a waveguide layer (12); a plurality of light-emitting elements (18); a plurality of light direction-altering means (16a-d) for the light-emitting elements; a plurality of light-receiving elements (18); and a plurality of light direction-altering means (16a-d) for the light-receiving elements, wherein the light direction-altering means comprises reflectors (prisms) to couple the light in and out of the waveguide layer. Each element 18 comprises the light-emitting element having a plurality of lasers (102) and a plurality

Art Unit: 2874

light-receiving portions (112) (see paragraphs [0050] and [0051] and Fig. 2). Since the light-receiving portions are made of six separate photodiodes they are inherently capable of receiving a signal independently (see [0051]).

Regarding claim 12, Perner's device receives propagated light, performs OE conversion (photodiodes [0059]), performs EO conversion (laser) and causes the light to propagate in the optical waveguide layer in a predetermined mode of propagation.

Regarding claims 13 and 14, Perner discloses a layer substrate comprising an electric circuit board and the waveguide layer of above that is embedded with the electric circuit multilayer substrate (see [0063] and Fig. 5).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 11, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perner.**

Regarding claim 11, as described above Perner disclose the claimed invention except an electric wiring provided on the surface of the optical waveguide layer. Perner teaches lasers and photodiodes placed on the waveguide layer. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made

Art Unit: 2874

to use an electric wiring on the waveguide layer in Perner to provide power to lasers and photodiodes.

Regarding claims 15 and 16, Perner discloses the multilayered optical waveguide device having an electric circuit board (40, 44) except an electronic chip and multi-bit wirings between a plurality of electronic chips. Perner teaches the photodiodes that converts the optical signals into electrical signals. Use of electrical chips is known in the art to further process the received signals such as comparing or coupling the signals to end users. Thus, one with ordinary skill in the art would recognize the use of electronic chips in Perner to provide further processing of the converted signals and thus using multi-bit wirings in Perner also would have been obvious to increase the data transmission speed between chips.

Allowable Subject Matter

8. Claims 3, 4, 7 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. None of the prior art of record teaches or reasonably suggests the light-receiving element having a plurality of light-receiving portions arranged in a circle to receive the light from all directions traveling in the optical waveguide layer as set forth in claim 3, and there is no other prior art teaching that can be combined with the Heflinger or Perner references to perform the identical function in applicant's invention.

Art Unit: 2874

9. Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. None of the prior art made of record teaches or reasonably suggests the claimed first light direction-altering means embedded in the optical waveguide layer in a form of a half cylindrical or triangular structure as recited in claim 6 in combination with the other claimed features, and there is no other prior art teaching that can be combined with the Heflinger reference to perform the identical function in applicant's invention.

Response to Arguments

10. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

Art Unit: 2874


shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

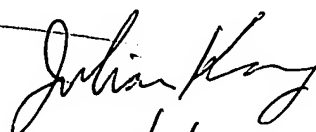
12. The prior art documents submitted by applicant have been considered and made of record (note the attached copy of form PTO-1449).

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juliana K. Kang whose telephone number is (571) 272-2348. The examiner can normally be reached on Mon. & Fri. 10:00-6:00 and Tue. & Thur. 10:00-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rod Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Rodney Bovernick
Supervisory Patent Examiner
Technology Center 2800


9/3/04